Food Safety from Farm to Table - The Minnesota Model

State agencies responsible for food safety in Minnesota increased their effectiveness when they moved into the same building; in the process, they created a model of cooperation that ensures a safer food supply for the entire country.

The Minnesota departments of Agriculture and Health—two state agencies responsible for food safety—resolved apprehensions and moved into shared office and laboratory space in 2005 after decades of working separately. Co-locating food safety experts allowed collaborations to grow and enhanced prevention and response to outbreaks of foodborne illness. Unexpectedly, the move also facilitated transformation of the country's food safety system.

Things get worse before better

In 2002 the Minnesota state legislature found finances to build a set of new office and laboratory facilities that would house together the departments of Agriculture and Health. Until then, the departments were spread around the state in six different locations. Even with funding assured, it was not an easy move.

"Egos, turf, and budget battles strained the relationship between the departments," explains Gene Hugoson, commissioner of Agriculture from 1995-2010. Hugoson saw an opportunity for improved cooperation between the agencies. Both departments play a crucial role in food safety, Agriculture focuses on food production, processing and retail before it reaches the kitchen (and consumer's mouth) while Health takes care of everything after. While the roles are equally important, unequal media attention created tension. Health captured news headlines as foodborne illness problem-solvers, while Agriculture's role of prevention through inspection and assurance of safe food was frequently ignored by the media. Further, Health was twice as big as Agriculture, which raised fears among some Agriculture employees of being absorbed into the department of Health and potentially weakening prevention.

A three-year planning process further increased employee apprehension. Meetings on shared concerns were sometimes called without inviting all involved. An active rumor mill reinforced problems while largely ignoring the benefits of co-locating. The move raised many concerns—ranging from routine, such as parking; to more serious, such as disrupting well-established working relationships. Laboratory personnel worried that sharing equipment between the Health and Agriculture laboratories might increase the risk of contamination. The epidemiologists were concerned that locating the laboratories in a separate building could stymie close working relationships that took years to develop.

Still, Hugoson and other leaders recognized as early as 1998 that co-locating the departments would improve cooperation between the agencies, leading to better results for the public.

More cooperation needed

If anyone understands the value of cooperation and challenges of achieving co-location, it is Hugoson. He served five terms in Minnesota's House of Representatives and then as commissioner of Agriculture under three consecutive governors. Hugoson's tenure at Agriculture coincided with rapid expansion in the complexity of the nation's food supply, with the number of identified multistate outbreaks more than doubling during the 1990's. Today identifying the cause of foodborne illness often involves numerous states, federal agencies; and dozens of farmers, manufacturers, processers, distributors and vendors. Further, the events of 9/11 raised concerns about intentional sabotage of the food system.

"The problem before co-location was that some key working relationships between people at Agriculture and Health were not fully developed when an outbreak struck. A time of crisis is the worst time to be passing out business cards," says Hugoson.

Before co-location the outbreak investigation process worked, but the physical separation of Agriculture and Health made collaboration more cumbersome. Typically, hundreds of phone calls and faxes went back and forth between departments during an investigation. Co-location streamlined the work. Now experts from both departments involved with an investigation can gather in the same room within a matter of minutes, shaving weeks to months off an outbreak and potentially sparing hundreds of illnesses or deaths.

Eventually concerns about co-location were resolved through innovation and compromise. For example, a skyway bridge was added between the office and laboratory buildings allowing epidemiologists and laboratory workers to interact easily. People parking closer to the building pay more, regardless of job title or department.

Testing the Minnesota Model

Three years after the move the co-located team faced not one, but two, major outbreaks of foodborne illness. A large outbreak of *Salmonella* Saintpaul infections occurred in the spring of 2008 and eventually afflicted at least 1,500 people in 43 states with 286 hospitalizations. Some investigators suspected raw tomatoes, but Minnesota's joint agency investigation helped finger the true culprit: Health identified jalapeno peppers as the major vehicle for transmission, and Agriculture traced them back to Mexico.

A few months later, a second large outbreak of *Salmonella* Typhimurium infections spread across 46 states, resulting in 714 illnesses with nine deaths, three of which occurred in Minnesota. The team traced the outbreak to contaminated peanut butter from a factory in Blakely, Georgia. The outbreak made national news, with one headline coining the term "the Minnesota Model," and other reports describing how the co-located Minnesota Agriculture and Health departments worked together to solve the case.

"Co-location set Ag literally 100 feet away from the Health group. We can run back and forth during an investigation, making communications far more frequent and easier to do. And talking in-person is always better than by email or phone," explains Kirk Smith, supervisor of the Foodborne, Vectorborne and Zoonotic Diseases Unit at the Minnesota Department of Health.

The collaboration has become efficient and seamless. When doctors and clinical laboratories find a patient positive for specific pathogens—such as *Salmonella* or *E. coli* O157:H7—they report it to Health and share samples. The Health laboratory runs DNA "fingerprints" and uploads them to a nationwide database called "PulseNet". Simultaneously, University of Minnesota Public Health graduate students employed by Health , known as Team D (short for Team Diarrhea), carry out telephone interviews of patients to determine who ate what where. When epidemiologists detect a pattern of illness, they initiate a search for the source.

For example, if tainted food comes from a grocery store or restaurants—as some of the jalapeno peppers did[1]—the Rapid Response team of scientists at Agriculture starts a "traceback," combing through stacks of sales records to trace the source of contamination while laboratory scientists test the implicated food for pathogens. The integrated Minnesota food safety team routinely cooperates with federal agencies, facilitating quick and efficient solutions to outbreaks.

The national scope of the problem of foodborne illness underscores the need for a robust model of cooperation: between 1993 and 2008 Americans suffered more than 16,000 multistate foodborne outbreaks, sickening over 300,000 people and killing hundreds. This suggested to Senator Amy Klobuchar (D-MN) that the nation's food safety system needed overhaul, and in 2009, she introduced the "Food Safety Response Act" to Congress. The bill called for regional food safety centers based on the Minnesota Model, and it passed into law in January 2011 as part of the Food Safety Modernization Act. Later the same year, the CDC awarded the Minnesota Department of Health one of five competitive grants to create an Integrated Food Safety Center of Excellence in partnership with the University of Minnesota.

Integration and communal space now means that employees at both agencies exchange more than business cards; they share printer stations, conference rooms and coffee in the atrium. People know and trust each other, which has transformed Agriculture and Health into a streamlined investigative unit. Their increased cooperation has become a model for the country, and because of them, the U.S. national food supply is safer than ever.

Compiled with support from the Rockefeller foundation and the University of Minnesota (UMN) using source material from individuals and organizations noted in the story; writing by UMN staff members; and, the professional reporting and writing services of Genevive Bjorn.
Completed January 2013.

[1] For more detail about the outbreak investigation see Barton Behravesh et al. 2011. http://www.nejm.org/doi/full/10.1056/NEJMoa1005741#t=article
[2] For more detail about the use of traceback methods see Miller et al. 2012. http://www.ncbi.nlm.nih.gov/pubmed/22289593